

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appln. No.: 10/780,342	)	<u>CERTIFICATE OF MAILING</u>
	)	I hereby certify that this
Applicant: Christopher J. Misorski et al	)	correspondence is being deposited
	)	with the United States Postal Service
Filed: February 17, 2004	)	with sufficient postage as first class
	)	mail in an envelope addressed to:
Title: Marine Drive Unit Overmolded	)	Board of Patent Appeals and
with a Polymer Material	)	Interferences, U.S. Patent and
	)	Trademark Office, P.O. Box 1450,
TC/A.U.: 3617	)	Alexandria, VA 22313 on this 10th
Examiner: Lars A. Olson	)	day of January, 2006.
)	
Docket No.: 1636-00564 (M09719)	)	<i>Aleshia Prange</i> January 10, 2006
	)	Aleshia Prange Date

APPELLANT'S AMENDED BRIEF ON APPEAL

Board of Patent Appeals and Interferences
U.S. Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Amended Brief on Appeal is submitted in response to the Office
Action mailed December 22, 2005, and notification of Non-Compliant Appeal Brief.

REAL PARTY IN INTEREST

In accordance with 37 C.F.R. § 41.37(c)(1)(i), the real party in interest is
Brunswick Corporation, by assignment from the inventors dated February 11, 16, 2004,
recorded in the U.S. Patent and Trademark Office on February 17, 2004 at Reel 015004,
Frame 0873, and August 24, 2004 at Reel 015716, Frame 0381.

RELATED APPEALS AND INTERFERENCES

In accordance with 37 C.F.R. § 41.37(c)(1)(ii), it is hereby stated that there are no other prior or pending appeals, interferences or judicial proceedings known to Appellant, Appellant's legal representative, or assignee which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the present pending Appeal.

STATUS OF CLAIMS

In accordance with 37 C.F.R. § 41.37(c)(1)(iii), the following is a statement of the status of the claims.

Claims 16, 17, 19-22, 24-33 stand cancelled.

Claims 8, 18, 23 stand allowed.

Claims 1-7, 9-15, 34, 35 stand rejected.

Claims 1-7, 9-15, 34, 35 are appealed.

Claims 1, 2, 6, 7, 9-15, 34 have been rejected under 35 U.S.C. § 103(a) over Takasaki et al. U.S. Patent 6,312,821 in view of deBlois et al. U.S. Patent 5,718,014. Claims 3-5, 35 have been rejected under 35 U.S.C. § 103(a) over Takasaki et al. '821 in view of deBlois et al. '014 and further in view of Rafferty et al. U.S. Patent 5,656,376.

STATUS OF AMENDMENTS

In accordance with 37 C.F.R. § 41.37(c)(1)(iv), the following is a statement of the status of any Amendment filed subsequent to the Final Rejection.

No Amendment has been filed subsequent to the Final Rejection and new ground of rejection mailed September 19, 2005.

SUMMARY OF CLAIMED SUBJECT MATTER

In accordance with 37 C.F.R. § 41.37(c)(1)(v), the following is a summary of the claimed subject matter.

Independent claim 1 defines a marine propulsion device including a metallic gear housing structure (10) having a polymer layer (50) overmolded thereon (Fig. 2).

Dependent claims 2-6 define subcombinations.

Dependent claim 7 requires an adhesion promoting substance to facilitate the adhesion of the overmolded polymer layer (5) to an outer surface of the gear housing structure (10). Claim 9 depends from claim 7 and further requires that the adhesion promoting substance be disposed between the metallic gear housing structure and the polymer layer.

Dependent claims 10, 11 define subcombinations.

Dependent claim 12 defines a subcombination wherein the thermal coefficient of expansion of the metallic gear housing structure is generally similar to the thermal coefficient of expansion of the polymer layer.

Dependent claim 13 requires that the polymer layer be held in intimate contact with an outer surface of the gear housing structure with no space therebetween.

Dependent claim 14 requires that the polymer layer be mechanically bonded to the gear housing structure.

Dependent claim 15 requires that the polymer layer be chemically bonded to the gear housing structure.

Dependent claim 34 defines a subcombination wherein the overmolded polymer layer has an exposed surface of a shape selected from the group consisting of at least one of a skeg and a bullet-shaped gear housing.

Dependent claim 35 defines a subcombination wherein the overmolded polymer layer has an exposed surface of hydrodynamic shape. This subject matter was initially indicated as allowable, but then later rejected. (The requirement of an exposed

surface of hydrodynamic shape initially appeared in claim 33 which was indicated as allowable following applicant's Amendment mailed May 23, 2005, which claim was objected to, but not rejected, in the Office Action mailed June 3, 2005, which allowability was confirmed and clarified in a teleconference of June 8, 2005 as noted in applicant's Amendment mailed July 12, 2005, top of page 6. The noted limitation of an exposed surface of hydrodynamic shape was incorporated into claim 1 in applicant's Amendment mailed July 12, 2005, to place such claim in condition for allowance. However, such amended claim 1 was rejected in the Office Action mailed July 25, 2005.)

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

In accordance with 37 C.F.R. § 41.37(c)(1)(vi), the following is a concise statement of each ground of rejection presented for review.

A first ground of rejection presented for review is the rejection of claims 1, 2, 6, 7, 9-15, 34 under 35 U.S.C. § 103(a) over Takasaki et al. U.S. Patent 6,312,821 in view of deBlois et al. U.S. Patent 5,718,014.

A second ground of rejection presented for review is the rejection of claims 3-5, 35 under 35 U.S.C. § 103(a) over Takasaki et al. '821 in view of deBlois et al. '014 and further in view of Rafferty et al. U.S. Patent 5,656,376.

ARGUMENT

In accordance with 37 C.F.R. § 41.37(c)(1)(vii), Appellant now sets forth his contentions with respect to each ground of rejection presented for review pursuant to 37 C.F.R. § 41.37(c)(1)(vi), and the basis therefor.

In accordance with 37 C.F.R. § 41.37(c)(1)(vii), the claims involved in the Appeal are set forth in the attached claims appendix.

Each of the claims is argued in detail below. Additionally, the following introductory comments are respectfully noted for the Board's consideration.

The claimed subject matter relates to a marine propulsion system, and more particularly to a marine propulsion system in which the drive unit is overmolded with an overmolded polymer layer to protect the metallic drive unit from corrosion. Those in the art are aware that metallic drive units are subject to corrosion, particularly when used in salt water. In order to inhibit corrosion of the metallic drive unit, the gear housing structure is typically painted with a corrosion inhibiting primer and at least one coat of paint. However, when the paint is scratched or gouged, the protective characteristic of the primer and paint coats can become severely degraded. The present invention relates to a new use of known technology in what is believed to be a new, nonobvious combination. The known technology is polymer materials and overmolding techniques. Those in the art are aware of many products on which a polymer overmolded layer is used to seal or protect a surface of an object. The new use of such known technology is a marine propulsion device having a metallic gear housing structure, namely overmolding a polymer layer thereon as defined in combination. The present claimed subject matter involves a marine drive with an overmolded polymer layer. Fig. 2 shows an exemplary mold 40, 41 for overmolding the overmolded polymer layer 50 on metallic gear housing structure 10 of the marine propulsion device.

For clarification and simplification of the issues, Appellant hereby admits that:

- (a) marine propulsion devices with a metallic gear housing structure are known in the prior art; and
- (b) overmolded polymer layers on various structures are known in the prior art.

An issue presented for review is whether it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize an overmolded polymer layer on the metallic gear housing structure in a marine propulsion device, in combination as set forth in claim 1.

Are the cited references analogous art? For example, even the broadest statements of applicability of de Blois et al. '014 are limited to a hand-held cleaning apparatus or a hand-held tool. Even the broadest applicability of Rafferty et al. '376 is limited to pre-molded components, which are then later assembled or mounted into a marine structure. Is the specification disclosure in de Blois et al. '014 and/or Rafferty et al. '376, and the reasonably extended teachings thereof, applicable to or suggest or motivate the proposed application thereof to Takasaki et al. '821? Even if the proposed application or combination of references is attempted, is there a suggestion or motivation to overmold a polymer layer on gear case 11 of Takasaki et al. '821?

Has the burden of a prima facie showing been met? Are the references combinable, including the reasonable teachings thereof? Is a linking reference necessary, particularly in view of the beneficial advantages and results, or is the mere combination of individually known aspects in the prior art sufficient to meet the requisite prima facie showing?

Is there a nonobvious act of cognition and selection required to arrive at the claimed subject matter?

Is the simplicity and effectiveness of Appellant's solution, notwithstanding the long-felt but unresolved need for same, surprising in a crowded art such as marine propulsion, and is this actually probative of nonobviousness?

Has Appellant met his burden under MPEP 2144.03 for adequate traversal, and if so, must documentary evidence be provided to support rejection?

If there is "doubt", should such doubt be resolved in Appellant's favor?

A further issue presented for review is whether supporting authority of record, beyond "design choice", is required for rejection of the subject matter of claim 12 requiring that the thermal coefficient of expansion of the metallic gear housing structure be generally similar to the thermal coefficient of expansion of the overmolded polymer layer.

A further issue presented for review is obviousness of the subject matter of claim 34 requiring that the overmolded polymer layer have an exposed surface of a

shape selected from the group consisting of at least one of a skeg and a bullet-shaped gear housing in the defined marine propulsion device.

A further issue presented for review is obviousness of the subject matter of claim 35 requiring that the overmolded polymer layer have an exposed surface of hydrodynamic shape.

CLAIM 1

Claim 1 has been rejected under 35 U.S.C. § 103(a) over Takasaki et al. '821 in view of de Blois et al. '014. The Examiner states that Takasaki et al. '821 discloses a marine propulsion device, as shown in Figs. 1 and 2, that is comprised of an outboard motor 10, with an aluminum gear housing structure 11, an aluminum drive shaft housing 12, that is attached to the gear housing, and a polymer layer 24 that is chemically bonded on an outer surface of the gear housing structure and drive shaft housing as shown in Fig. 2, with an adhesion promoting substance 23 facilitating adhesion of the polymer layer to the outer surface of the gear housing structure and drive shaft housing, and that after bonding of the polymer layer to the gear housing structure, the polymer layer has an exposed or outer surface with the shape of the gear housing structure. The Examiner states that Takasaki et al. '821 discloses all of the features claimed except for the use of a polymer layer that is molded around a metallic gear housing structure, the Examiner states that deBlois et al. '014 discloses a motorized device with an overmolded cover as shown in Figs. 1-13, the device being comprised of a metal gear housing structure 22, Fig. 2, and a polymer layer 24 that is overmolded on the gear housing structure, Fig. 1, by means of injection molding as shown in Fig. 9A, in order to make the gear housing structure waterproof.

deBlois et al. '014 discloses a housing for a hand-held cleaning apparatus or tool having a cover molded onto a shell, column 1, lines 6-7, 51-55, 59-61. As noted at column 3, lines 33+, referring to Fig. 2, apparatus 10 includes a housing 12, a battery cap 14, a battery 16, a motor 18, and a cleaning attachment 20. The housing includes a

subassembly housing or shell 22 and a cover 24, column 3, lines 36-37. The cover 24 is injection molded over the subassembly shell 22, column 3, lines 55-56.

Claim 1 defines a marine propulsion device comprising a metallic gear housing structure and a polymer layer overmolded on the gear housing structure. As noted in the specification, page 1, lines 7-8, the overmolded layer of polymer material protects the metallic drive unit from corrosion, which addresses problems in marine propulsion systems where metallic drive units are subject to corrosion, particularly when used in salt water, page 1, lines 11-12. As noted at page 1, lines 17-19, those skilled in the art of polymer materials and overmolding techniques are well aware of many products on which a polymer overmolded layer is used to seal or protect a surface of an object. deBlois et al. '014 is an example.

Nonanalogous Art

It is respectfully submitted that deBlois et al. '014 is nonanalogous art. Even the broadest statements of applicability of deBlois et al. '014 are limited to a hand-held cleaning apparatus or a hand-held tool, for example independent claims 1, 12, 21. Furthermore, the specification disclosure in deBlois et al. '014, and the reasonably extended teachings thereof, do not extend to nor suggest nor motivate the proposed application thereof to Takasaki et al. '821. For example, even in the alternate embodiments noted in deBlois et al. '014, e.g. column 10, lines 52+, it is noted that "the cover could be molded onto a shell of any suitable type of motorized hand tool". It is respectfully submitted that there is no authority of record, other than Appellant's disclosure, for applying deBlois et al. '014 as analogous art. There is no suggestion in the references themselves, neither Takasaki et al. '821 nor deBlois et al. '014, nor any other bridging or linking reference supporting nor suggesting nor motivating nor even hinting at an attempted combining of such references.

As noted in the present specification, page 5, lines 2+, it is known that various types of coatings, such as paint, can be used to protect surfaces of components

that would otherwise be subject to corrosive attack because of the environment in which they are used. It is also known that composite structures can be attached to the external surfaces of marine drives, such as the systems described in U.S. Patents 5,487,687 and 6,468,119. It would be significantly beneficial if an overmolded layer could be quickly and efficiently applied to a marine propulsion system that provides a rugged protective overmolded layer that is more durable than paint and more inexpensively applied than pre-formed housing elements that are later attached to the marine drive.

The pieces of the puzzle were in existence and known prior to Appellant's invention, as stated above and as evidenced by deBlois et al. '014, yet such individual pieces of the puzzle were never combined until taught by Appellant. The noted longstanding need and the noted existence of individual components, yet the nonrecognition of the claimed solution until Appellant's invention, is believed probative of nonobviousness. If the solution were obvious to one of ordinary skill in the art, then the longstanding need would have motivated the combination proposed by the Examiner and the recognition of references such as deBlois et al. '014 as analogous art for solving marine propulsion problems. Instead, Appellant's solution and combination remained elusive and unrecognized. This is believed demonstrative evidence of nonobviousness.

Burden Of Prima-Facie Showing

It is respectfully but affirmatively submitted that a prima facie showing for rejection of claim 1 has not been established because there is no supporting authority for applying deBlois et al. '014, much less the combination of two references, as analogous art nor for suggesting or motivating the combination of deBlois et al. '014 and Takasaki et al. '821 nor how to effect such combination. Furthermore, it is respectfully submitted that the references are actually probative of nonobviousness of Appellant's solution and combination.

It is respectfully submitted that a prima facie showing has not been made that it is obvious to provide a marine propulsion device including a metallic gear housing

structure and a polymer layer overmolded on the gear housing structure. References for individual aspects have been cited, including a gear housing structure and a polymer overmolded layer. Is it obvious to provide a polymer overmolded layer on a marine propulsion gear housing structure? Is a linking reference necessary, particularly in view of the beneficial advantages and results, or is the mere combination of individually known aspects in the prior art sufficient to meet the requisite prima facie showing? It is respectfully submitted that a linking reference is necessary. Furthermore, it is respectfully noted that there is no suggestion in the references themselves for combining same to arrive at the combination defined in claim 1.

Is the simplicity and effectiveness of Appellant's solution, notwithstanding the long-felt but unresolved need and motivation for same, surprising in a crowded art such as marine propulsion, and in a crowded art such as overmolding of polymer layers, and is this actually probative of nonobviousness? It is respectfully submitted that the answer is yes. There is no reference cited which suggests the marriage of these two technologies.

As noted by the Supreme Court in United States v. Adams, 383 US 39 at 50, 148 USPQ 479, at 483 (1966), a companion case to Graham v. John Deere Company, 383 US 1, 148 USPQ 459 (1966):

"It begs the question. . .to state merely that magnesium and cuprous chloride were individually known battery components. If such a combination is novel, the issue is whether bringing them together as taught [by the inventor] was obvious in the light of the prior art."

The act of selection is a supportable basis for invention, and is not precluded by apparent simplicity, Republic Industries, Inc. v. Schlage Lock Co., 592 F.2d 1963, 200 USPQ 769 (1979) quoting Judge Learned Hand, B.G. Corp. v. Walter Kidde and Co., 79 F.2d 20, 26 USPQ 288 (1935):

"It may be that in certain circumstances the very choice of the elements to be selected is not obvious.", Republic, page 778.

Simplicity of a combination makes the task even more difficult.

It is respectfully submitted that the burden of factually supporting a prima-facie conclusion of obviousness has not been met. There is no showing, suggestion, or even hint of combining the references as proposed, nor to arrive at the combination defined in claim 1. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination, MPEP 2143.01. None of the references suggest the desirability of the proposed combination. It is respectfully submitted that there must be some motivation in the prior art itself for combining or attempting to combine the references, particularly in view of the significant advantages resulting from Appellant's combination as noted above, and the resulting enablement afforded thereby.

Further, in direct rebuttal of the Examiner's position, applicant respectfully notes In re Lee, 61 USPQ (2nd) 1433, CAFC 2002, noting that the question of obviousness requires evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. The CAFC further elaborated on this matter by explaining that the test cannot be met simply by saying that the basis for combining the references comes from "common knowledge" or is "common sense". Respectfully, the Examiner's position is not sustainable.

In re Kotzab, 55 USPC 2nd 1313, CAFC 2000, the Court commented on the need for avoiding a "hindsight syndrome". This is particularly important in cases where the very ease to which the invention can be understood may prompt one "to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher".

Combinability of References and Reasonable Teachings Thereof

The Board is respectfully requested to consider In re Dembiczak, 50 USPQ 2nd 1614 (1999), wherein the invention at issue was a large trash bag made of

orange plastic and decorated with lines and facial features, allowing the bag, when filled with trash or leaves to resemble a Halloween-style pumpkin or jack-o-lantern, and which was rejected over a combination of the references showing traditional trash bags and decorated jack-o-lantern or pumpkin bags. The Court notes, page 1616, that an analysis under §103 begins with the phrase "at the time the invention was made" to guard against entry into the "tempting but forbidden zone of hindsight" and to avoid the temptation which may otherwise prompt one "to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher". Further, the Court in Dembiczak notes, page 1617, that the "case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references". The Court further notes, page 1617, that "combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability – the essence of hindsight".

It is respectfully submitted that in the present case, the rejection does not identify any suggestion, teaching or motivation to combine the references as proposed.

As noted by the Court in Dembiczak, page 1618, "yet this reference-by-reference, limitation-by-limitation analysis fails to demonstrate how the Holiday and Shapiro references teach or suggest their combination with the conventional trash or lawn bags to yield the claimed invention", so too the present rejection reference-by-reference and limitation-by-limitation analysis fails to demonstrate how the references teach or suggest their combination.

Act Of Cognition Or Selection

Is there a nonobvious act of cognition and selection required to arrive at the invention defined in claim 1? It is respectfully submitted that the answer is yes. The presence in the prior art of marine propulsion devices with metallic gear housing

structures, and the presence in the prior art of polymer overmolded layers, yet the non-recognition of Appellant's solution is respectfully submitted as demonstrative evidence of nonobviousness. This non-recognition is particularly conspicuous in a crowded mature art, and is believed probative that Appellant's solution involves a nonobvious act of cognition and selection required to arrive at such solution not previously recognized in the art.

The Board is respectfully requested and earnestly entreated to consider that simplicity in application does not preclude a finding of nonobviousness. Those in the art have not recognized nor been motivated to Appellant's combination, notwithstanding the known use of individual aspects. It may deceptively seem apparent to now combine individual aspects as shown by Appellant, but only with the aid of hindsight. There does not appear to be any suggestion of any such marriage or combination in the art to arrive at the present solution in the defined combination, nor does there appear to be a reference which bridges the gap to Appellant's invention. The pieces of the puzzle were present and known for many years, but never combined together until Appellant's invention. It is surprising that such a simple yet desirable combination has apparently gone unrecognized in the art for so long. The absence of such suggestion is particularly conspicuous in a crowded art, especially in view of the age of the art and the longstanding non-recognition of the present solution, and is believed probative of nonobviousness.

It is respectfully submitted that the cognition, selection and application in the present invention is novel and nonobvious and is not recognized in the prior art. The invention requires linking association involving a cognitive step not suggested previously in the art.

Appellant recognizes that it is a difficult if not impossible task to completely purge oneself of hindsight when attempting to place oneself in the shoes of the legal ghost called the ordinarily skilled artisan. Simplicity of a combination makes the task even more difficult. As noted above by the Supreme Court *It begs the question. . .to state merely that magnesium and cuprous chloride were individually known battery*

components. If such a combination is novel, the issue is whether bringing them together as taught [by the inventor] was obvious in the light of the prior art. The act of selection is a supportable basis for invention, and is not precluded by apparent simplicity. As noted by Judge Learned Hand, it may be that in certain circumstances the very choice of the elements to be selected is not obvious.

MPEP 2144.03

Appellant respectfully notes MPEP 2144.03 indicating:

In limited circumstances, it is appropriate for an examiner to take official notice of facts not in the record or to rely on "common knowledge" in making a rejection. . .

MPEP 2144.03(A) states:

Official notice without documentary evidence to support an examiner's conclusion is permissible only in some circumstances.

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Official notice unsupported by documentary evidence should only be taken by the examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known.

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the notice of facts beyond the record which may be taken by the examiner must be "capable of such instant and unquestionable demonstration as to defy dispute". . .

However, MPEP 2144.03(A) further states:

We reject the notion that judicial or administrative notice may be taken of the state of the art. The facts constituting the state of the art are normally subject to the possibility of rational disagreement among reasonable men and are not amenable to the taking of such notice.

As noted in MPEP 2144.03(B):

Ordinarily, there must be some form of evidence in the record to support an assertion of common knowledge.

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If such notice is to be taken, the basis for such reasoning must be set forth explicitly. The examiner must provide specific factual findings predicated on sound technical and scientific reasoning to support his or her conclusion of common knowledge.

Traverse Under MPEP 2144.03

As noted in MPEP 2144.03(C):

To adequately traverse such a finding, an applicant must specifically point out the supposed errors in the examiner's action, which would include stating why the noticed fact is not considered to be common knowledge or well-known in the art.

Applicant previously (in responsive Amendment mailed 5/23/2005) respectfully but vigorously traversed such assertion and finding, and Appellant hereby re-asserts and re-confirms same. Applicant specifically pointed to the error made by the Examiner in the Office Action of 4/1/05, on page 4, second paragraph:

"Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to utilize a polymer layer that is overmolded on a metal gear housing structure, as taught by deBlois et al., in combination with the marine propulsion device as disclosed by Takasaki et al. for the purpose of providing a marine propulsion device with a gear housing structure having a waterproof outer covering."

Furthermore, applicant specifically pointed out error as to the following, all of which are particularly and specifically refuted and pointed out in detail above, namely:

- (a) the state of the art and the level of ordinary skill in the art
(as specifically stated in MEPEP
2144.03(A): *we reject the notion that
judicial or administrative notice may
be taken of the state of the art*);
- (b) nonanalogous art;
- (c) the burden of a prima facie showing;
- (d) combinability of references and reasonable teachings
thereof;
- (e) the act of cognition or selection.

Applicant has adequately traversed the Examiner's assertion, and accordingly it is respectfully submitted that documentary evidence must be provided if the rejection is to be maintained, as specifically set forth in MPEP 2144.03(C):

If applicant adequately traverses the examiner's assertion of official notice, the examiner must provide documentary evidence in the next Office action if the rejection is to be maintained.

The requisite documentary evidence has not been provided. Accordingly, it is respectfully submitted that the rejection should not be sustained.

Doubt

The Board is further respectfully and earnestly entreated to consider that "doubt" as to patentability should be resolved in the Appellant's favor. As noted in In Re Warner (1967) 54 CCPA 1628, 379 F.2d 1011, 154 USPQ 173, Cert denied 389 US 1057, rehearing denied 390 US 1000:

The "doubt" in the above cases arose from and related to the absence of facts necessary to support the Patent Office's legal conclusion of obviousness under Section 103. We think the precise language of 35 USC 102 that "a person shall be

entitled to a patent unless," concerning novelty and unobviousness, clearly places a burden of proof on the Patent Office which requires it to produce the factual basis for its rejection of an application under Sections 102 and 103, see Graham and Adams. Where such proof is lacking we see no necessity for resolving doubt in favor of the Patent Office's position, for example, where, as in the above cases, the factual basis to support the legal conclusion of obviousness under Section 103 is missing, and the record there supported the applicant's position that the invention was reconstructed through hindsight. Nowhere in these cases was there the necessary factual basis to support the conclusion that it would have been obvious to one of ordinary skill to bring the elements together. United States v. Adams, supra.

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*A rejection based on Section 103 clearly must rest on a factual basis, and these facts must be interpreted without hindsight reconstruction of the invention from the prior art. In making this evaluation, all facts must be considered. The Patent Office has the initial duty of supplying the factual basis for its rejection. **It may not, because it may doubt that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in its factual basis.** (emphasis added) To the extent the Patent Office rulings are so supported, there is no basis for resolving doubts against their correctness. Likewise, we may not resolve doubts in favor of the Patent Office determination where there are deficiencies in the record as to the necessary factual bases supporting its legal conclusion of obviousness.*

The Board is thus earnestly solicited to resolve any issue of "doubt" in Appellant's favor.

CLAIM 2

Claim 2 depends from claim 1 and is believed allowable for the reasons noted above.

CLAIMS 3-5

Claims 3-5 have been rejected under 35 U.S.C. § 103(a) over Takasaki et al. '821 in view of deBlois et al. '014 and further in view of Rafferty et al. '376. The Examiner states that Takasaki et al. '821 in combination with the teachings of deBlois et al. '014 shows all of the features claimed except for the use of a polymer layer being comprised of a fiber, glass or carbon filled polymer. The Examiner states that Rafferty et al. '376 discloses a laminate structure for use with marine propulsion devices as shown in Figs. 1-35 where the laminate structure is comprised of a polymer layer in the form of an epoxy resin with reinforcement material in the form of fibers, glass or carbon added to increase the strength of the polymer, as described in lines 40-56 of column 8.

In response, it is respectfully noted that Rafferty et al. '376 does not teach or suggest overmolding of the composite or laminate 130, nor does it teach or suggest an overmolded layer on marine gear housing structure. In Rafferty et al. '376, various components, such as the housing of the bearing assembly, the coupling cover, the vanes, are first molded from the noted composite, and then secondly assembled into the desired supporting structure, i.e. the Rafferty et al. components are pre-formed by pre-molding, and then later assembled to or mounted to the structure. Such components are not overmolded on the marine drive unit. There is no overmolding, nor is there an overmolded polymer layer on the marine gear housing structure, as required by the claims in combination.

It is further respectfully submitted that Rafferty et al. '376 is non-analogous art. Even according the broadest applicability of Rafferty et al. '376, the teaching and motivation thereof is for pre-formed pre-molded component parts which are later assembled into an assembled unit, not overmolded thereon. The specification disclosure in Rafferty et al. '376 and the reasonably extended teachings thereof do not extend to nor suggest nor motivate the proposed application thereof to Takasaki et al. '821 and/or deBlois et al. '014 to provide the defined combinations of claims 3-5. It is respectfully submitted that there is no authority of record, other than Appellant's

disclosure, for applying Rafferty et al. '376 as analogous art. There is no suggestion in the references themselves, nor any other bridging or linking reference supporting nor suggesting nor motivating nor even hinting at an attempted combining of such references. Furthermore, even if Rafferty et al. '376 is applied, the resulting structure is not that defined in the claims which require an overmolded polymer layer on the gear housing structure.

CLAIM 6

Claim 6 depends from claim 1 and is believed allowable for the reasons noted above.

CLAIMS 7, 9

Claim 7 depends from claim 1 and is believed allowable for the reasons noted above. Furthermore, claim 7 requires an adhesion promoting substance to facilitate the adhesion of the overmolded polymer layer to an outer surface of the gear housing structure. There simply is no supporting authority of record to sustain rejection of this subject matter.

Claim 9 depends from claim 7 and further requires that the adhesion promoting substance be disposed between the metallic gear housing structure and the polymer layer. Again, there is no cited authority of record for supporting a rejection.

CLAIM 10

Claim 10 depends from claim 1 and further requires that the polymer layer be injection molded around the metallic gear housing structure. There is no supporting authority of record showing or supporting the claim limitation that the polymer layer be injection molded.

CLAIM 11

Claim 11 depends from claim 1 and further requires that the polymer layer be disposed on the defined drive shaft housing (12) attached to the gear housing structure. Again, there is no support for rejection of this combination.

CLAIM 12

Claim 12 depends from claim 1 and further requires that the thermal coefficient of expansion of the metallic gear housing structure be generally similar to the thermal coefficient of expansion of the polymer layer.

In the Office Action mailed July 25, 2005, page 4, first paragraph, the Examiner states that the use of a polymer layer with a thermal coefficient of expansion that is similar to a thermal coefficient of expansion of a metallic part that is to be coated by the polymer layer would be considered by one of ordinary skill in the art to be a design choice for the purpose of matching the thermal coefficients of expansion in order to minimize cracking of or damage to the polymer layer resulting from thermal expansion of the metallic part. Consideration of this rejection by the Board is respectfully requested in view of the following remarks.

As noted in the present specification, page 6, lines 9+, the improved combination defined in claim 12 inhibits the detachment of the polymer layer from the outer surface of the metallic gear case as a result of thermal expansions and contractions of the combined structure. If the thermal coefficients of the metallic gear case and the polymer layer differ by a significant amount, repeated expansions and contractions can result in a detachment of the polymer layer from the surface of the metallic gear case. As set forth in previous responses, Appellant respectfully but vigorously traverses the Examiner's assertion, and again invokes MPEP 2144.03. It is respectfully submitted that Appellant has adequately traversed the Examiner's assertion, and accordingly it is

respectfully submitted that documentary evidence must be provided if the rejection is to be maintained, as specifically set forth in MPEP 2144.03(C).

In view of the advantages and enhanced performance afforded by the subject matter of claim 12, it is respectfully submitted that the defined combination is not obvious. The matching of thermal coefficients of expansion of two members is in and of itself known in the prior art. However, there is no teaching in the prior art of a marine propulsion device comprising in combination a metallic gear housing structure and a polymer layer overmolded on the gear housing structure, and further wherein the thermal coefficient of expansion of the metallic gear housing structure is generally similar to the thermal coefficient of expansion of the polymer layer. There is no teaching nor suggestion nor motivation in the references themselves for the distinctive subject matter of claim 12, in the absence of Appellant's specification. There is no supporting authority of record establishing the asserted level of ordinary skill in the art, nor a bridging or linking reference for modifying or otherwise applying the references as proposed. In the absence of a prima facie showing, Appellant must respectfully but vigorously again challenge the grounds for rejection as entering the forbidden zone of hindsight, and again respectfully invoke MPEP 2144.03.

CLAIM 13

Claim 13 depends from claim 1 and further requires that the polymer layer be held in intimate contact with an outer surface of the gear housing structure with no space therebetween. Rejection of this distinctive claim limitation in combination is not supported in the record.

CLAIM 14

Claim 14 depends from claim 13 and further requires that the polymer layer be mechanically bonded to the gear housing structure. Rejection of this distinctive claim limitation in combination is not supported in the record.

CLAIM 15

Claim 15 depends from claim 13 and further requires that the polymer layer be chemically bonded to the gear housing structure. Rejection of this distinctive claim limitation in combination is not supported in the record.

CLAIM 34

Claim 34 depends from claim 1 and further requires that the overmolded polymer layer (50) have an exposed surface of a shape selected from the group consisting of at least one of a skreg (24) and a bullet-shaped gear housing (20).

Claim 34 has been rejected under 35 U.S.C. § 103(a) over Takasaki et al. '821 in view of de Blois et al. '014.

The references do not teach in combination a marine propulsion device including a metallic gear housing structure and a polymer layer overmolded thereon, for the reasons noted above, including: nonanalogous art; burden of prima facie showing; combinability of references and reasonable teachings thereof; act of cognition or selection; MPEP 2144.03; doubt. Furthermore, the references do not teach or suggest the distinctive claim limitation in combination of the overmolded polymer layer having an exposed surface of a shape selected from the group consisting of at least one of a skreg and a bullet-shaped gear housing.

CLAIM 35

Claim 35 depends from claim 1 and further requires that the defined overmolded polymer layer have an exposed surface of hydrodynamic shape. Claim 35 has been rejected under 35 U.S.C. § 103(a) over Takasaki et al. '821 in view of deBlois et al. '014 and further in view of Rafferty et al. '376. The Examiner states that Takasaki et al. in combination with the teachings of deBlois et al. shows all of the features claimed except for the use of a polymer layer having a hydrodynamic shape. The Examiner states that Rafferty et al. discloses a laminate structure for use with marine propulsion devices as shown in Figs. 1-35, wherein the laminate structure is comprised of a polymer layer in the form of an epoxy resin with reinforcement material, and that the polymer layer can be molded to form hydrodynamic shapes, as described in lines 49-52 of column 1. In response, it is respectfully noted that even if de Blois et al. '014 and Rafferty et al. '376 were combined with Takasaki et al. '821, there is still no teaching of the subject matter set forth in claim 35, as will now be set forth in detail.

In de Blois et al. '014, the external surface contours which are taught and motivated are those conducive to hand-held tools, for example as shown in Figs. 5A and 5B. Rafferty et al. '376 does not overcome the noted deficiency of the references because Rafferty et al. '376 does not teach or suggest overmolding of its composite or laminate 130, nor does it teach or suggest an overmolded polymer layer on gear housing structure. In Rafferty et al. '376, various components, such as the housing of the bearing assembly, the coupling cover, the vanes, are molded from the noted composite, and then later assembled into the desired supporting structure. There is no overmolding, nor is there an overmolded polymer layer on the gear housing structure, as required by claim 35. In the subject matter of claim 35, the polymer layer is not a pre-assembled member, but rather an overmolded polymer layer.

Claim 35 defines a new, nonobvious combination including an overmolded polymer layer having an exposed surface of hydrodynamic shape on a marine propulsion metallic gear housing structure. The Board is respectfully requested

and earnestly entreated to consider that simplicity in application does not preclude a find of nonobviousness. Those in the art have not recognized or been motivated to Appellant's combination, notwithstanding the known use of isolated aspects. It may deceptively seem apparent to now combine isolated aspects as shown by Appellant, but only with the aid of hindsight. There does not appear to be any suggestion of any such marriage or combination in the cited art, nor does there appear to be a reference which bridges the gap to Appellant's invention. The pieces of the puzzle were present and known in the art, but never combined together until Appellant's invention. It is surprising that such a simple yet desirable combination has apparently gone unrecognized in the art. The absence of such suggestion is particularly conspicuous in a crowded art, especially in view of the nonrecognition of the present solution, and is believed probative of nonobviousness. It is respectfully submitted that the recognition, selection and application in the present invention is novel and nonobvious, and is not recognized in the art. The invention requires linking association involving a cognitive step not suggested previously in the art.

CONCLUSION

Favorable consideration of this Appeal and allowance of claims 1-7, 9-15, 34, 35 is earnestly solicited.

Respectfully submitted,

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CLAIMS APPENDIX

In accordance with 37 C.F.R. § 41.37(c)(1)(viii), this Claims Appendix sets forth the claims involved in the Appeal, namely claims 1-7, 9-15, 34, 35.

1. A marine propulsion device, comprising:
 - a metallic gear housing structure;
 - a polymer layer overmolded on said gear housing structure.
2. The marine propulsion device of claim 1, wherein:
 - said metallic gear housing structure is made of aluminum.
3. The marine propulsion device of claim 1, wherein:
 - said polymer layer comprises a fiber filled polymer.
4. The marine propulsion device of claim 1, wherein:
 - said polymer layer comprises a glass filled polymer.
5. The marine propulsion device of claim 1, wherein:
 - said polymer layer comprises a carbon filled polymer.
6. The marine propulsion device of claim 1, wherein:
 - said polymer layer is overmolded around and surrounding said gear housing structure.
7. The marine propulsion device of claim 1, further comprising:
 - an adhesion promoting substance to facilitate the adhesion of said polymer layer to an outer surface of said gear housing structure.

9. The marine propulsion device of claim 7, wherein:
said adhesion promoting substance is disposed between said metallic gear housing structure and said polymer layer.
10. The marine propulsion device of claim 1, wherein:
said polymer layer is injection molded around said metallic gear housing structure.
11. The marine propulsion device of claim 1, further comprising:
a drive shaft housing attached to said gear housing structure, said polymer layer being disposed on said drive shaft housing.
12. The marine propulsion device of claim 1
wherein the thermal coefficient of expansion of said metallic gear housing structure is generally similar to the thermal coefficient of expansion of said polymer layer.
13. The marine propulsion device of claim 1, wherein:
said polymer layer is held in intimate contact with an outer surface of said gear housing structure with no space therebetween.
14. The marine propulsion device of claim 13, wherein:
said polymer layer is mechanically bonded to said gear housing structure.
15. The marine propulsion device of claim 13, wherein:
said polymer layer is chemically bonded to said gear housing structure.
34. The marine propulsion device of claim 1,

wherein said overmolded polymer layer has an exposed surface of a shape selected from the group consisting of at least one of a skeg and a bullet-shaped gear housing.

35. The marine propulsion device of claim 1, wherein said overmolded polymer layer has an exposed surface of hydrodynamic shape.